

## WHAT IS CLAIMED IS:

1. A computer program product for estimating the bandwidth of a connection between a client and a server, the computer program product comprising a set of computer executable instructions  
5 stored on a computer readable medium, the medium comprising:

a snippet for requesting the server to serve, consecutively, first and second objects to the client;

10 computer code means for delivering the snippet to the client responsive to the client accessing the server;

computer code means for invoking the snippet to execute on the client;

15 computer code means for sending the first and second objects to the client responsive to a request from the snippet; and

computer code means for determining the time interval between delivery of the first and second objects and for estimating the bandwidth therefrom.

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2. The computer program product of claim 1, wherein the code means for requesting the first and second objects comprises code means for identifying the first and second objects with URL's that are unique on a network connecting the client and the server.

25 3. The computer program product of claim 2, wherein the code means for transmitting the first and second objects to the client comprise code means for transmitting the first and second objects to the client from a content distribution network server that is architecturally proximal to an ISP of the client.

4. The computer program product of claim 3, where the second object has a size less than or equal to a minimum transmission unit associated with the network, wherein the second object is prevented from fragmentation.

5 5. The computer program product of claim 1, wherein the snippet includes:

code means for creating first and second image objects;

code means for generating a unique identifier (uniqueID); and

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code means for associating the first and second image objects with the first and second objects on the server using URLs containing the uniqueID.

15 6. The computer program product of claim 5, further comprising code means for ignoring, by the server, the uniqueID in the first and second URL's wherein requests for the first and second objects from any client are served from a single pair of objects on the server, regardless of the uniqueID in the URL's received by the server.

20 7. The computer program product of claim 5, wherein the code means for generating the uniqueID includes code means for deriving the identifier based on a time of day value and a random number.

25 8. The computer program product of claim 5, further comprising code means for responding to a request for the first object only after a request for the second object having the same uniqueID as the uniqueID associated with the request for the first object has been received.

9. The computer program product of claim 1, further comprising code means for invoking the snippet multiple times to obtain multiple estimates of the bandwidth and code means for selecting the highest obtained bandwidth as the estimated bandwidth.

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10. A service for estimating the obtainable bandwidth of a client's network connection, comprising:

5 enabling a server to request from a service provider an estimation of the bandwidth of a connection between the server and the client;

responding to the request for bandwidth estimation by providing the client with a snippet for requesting the server to serve first and second objects, in a chronologically sequential manner, to the client;

10 invoking the snippet to have the client request the first and second objects from the server, wherein the snippet returns information to the service provider indicative of the amount of time elapsing between delivery of the first and second objects;

15 estimating the obtainable bandwidth based in part on the elapsed time.

11. The service of claim 10, further comprising, maintaining response time data for the server and alerting the server based the server response time for a selected client and the estimated bandwidth associated with the selected client.

20 12. The service of claim 10, wherein the snippet identifies the first and second objects with URL's that are unique on the network connecting the client and the server.

25 13. The service of claim 12, wherein the server responds to the requests for the first and second objects by transmitting the first and second objects to the client from a content distribution network server that is architecturally proximal to an ISP server to which the client is connected.

30 14. The service of claim 13, where the second object has a size less than or equal to a minimum transmission unit associated with the network, wherein the second object is prevented from fragmentation.

15. The service of claim 14, further comprising invoking the snippet multiple times to obtain multiple estimates of the bandwidth and selecting the highest bandwidth estimate.

16. The service of claim 10, wherein the snippet includes:

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code means for creating first and second image objects;

code means for generating a unique identifier (uniqueID); and

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code means for associating the first and second image objects with the first and second objects on the server using URLs containing the uniqueID.

17. A server in a data processing network connecting the server to a client through the client's ISP, the server being configured to:

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provide a bandwidth estimation snippet to the client, the bandwidth estimation snippet being configured to request the server to transmit, in chronologically adjacent transactions, first and second objects to the client;

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identify a request generated by the snippet as a request for bandwidth estimation and respond to the request by providing the client with the first and second data objects; and

receive information from the client indicative of the time elapsing between delivery of the first and second objects.

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18. The server of claim 17, wherein the bandwidth estimation snippet requests the first and second objects from the server using first and second URL's that are unique throughout the network and to the particular request.

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19. The server of claim 17, wherein the first and second URL's each include a unique portion derived from the time of day associated with the request and a random number.

20. The server of claim 17, wherein the server provides the client with the first and second data objects by providing the first and second objects to a content distribution network server that is architecturally proximal to the client ISP wherein the client receives the first and second objects

5 from the CDN server.